DIETETICS

EINHORN

LECTURES ON DIETETICS

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BY

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TO

HIS DEAR AND HIGHLY ESTEEMED FRIEND

COLONEL OLIVER HAZARD PAYNE

this book is respectfully dedicated, in
recognition of his great devotion
to the art of medicine and
to higher education.

PREFACE

The edition of my monograph on Diet and Nutrition being exhausted I thought best to publish my lectures on diet which I usually deliver at the N. Y. Postgraduate Medical School in book form. They contain similar ideas to those expressed in the monograph. Moreover, they deal with a greater variety of subjects and express the more practical points. No attempt has been made to change the style or beautify the language of these lectures. They appear here as taken down by the stenographer. The reader has thus the advantage of the actual listener to this discourse.

I hope that the present monograph will facilitate the question of diet to the practitioner and will aid him in its management.

MAX EINHORN.

New York, February, 1914.

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LECTURES ON DIETETICS*

LECTURE I

THE PRINCIPLES OF DIET AND NUTRITION

I PROPOSE to give a few lectures on the subject of diet. Diet plays so important a part in health and disease that every physician should be well informed on all points pertaining to it. It should really form the basis of every medical study. It is the A, B, C of medicine. We cannot live without food and we cannot treat anyone without a certain dietary; and if we understand all the relations of diet a great deal can be accomplished by it alone in the treatment of disease, without the aid of

* Lectures I, II, III and IV on Dietetics have been delivered at the Postgraduate Medical School and Hospital and have appeared in the *Postgraduate Journal* of July, August, September and October, 1913.

medicine. Diet comprises all the questions relating to food, and food forms the basis of all animal life. Food contains all the substances found in the living organism, because the body develops upon it; it grows up from the little baby to the big organism. Nothing is added to the body excepting what is derived from the food.

On the other hand, food contains only the substances found in the earth. Everything that we eat, animal or vegetable, originated in the soil under one form or another. That means that whatever we have in our bodies comes from the earth. The Bible says: "From earth you are made and to earth you go." Nowadays we speak of the different elements found in the body. We have analyzed the latter and know that there exist the most varied substances: calcium, magnesium, iron, phosphates, nitrogen, sulphur, etc.; but in the end the old philosophers were right. If we should take earth, even if we have all

the elements, carbon, calcium, phosphate, etc., we could not accomplish anything with it, but after these substances have been changed by living matter and developed in the forms in which they exist in either animals or plants then it is fit for our organism. It has first to undergo this radical change through living matter.

Thus far we have not been able to accomplish these changes artificially; that is, we cannot put inorganic matter together so as to bring it into life. We require another living medium to accomplish this change. Every living cell must originate from another one. So living plants develop from the seed into plants. There must first be something that is alive to bring forth new life. We know nothing yet of how inorganic matter develops into an organic being. It may be that the great chemists and physiologists think it originated of itself, but we do not know about that for the present. So far as we can

tell, nothing is developed of itself, but every animate being is developed from some living individual.

Our food, then, consists of either animal or vegetable matter. We find some nations living principally on animal diet, and some animals living on animal food exclusively; others live on vegetable material alone, and some nations live principally on vegetable food. That shows that either of the two is feasible,—that persons can live either on vegetable food alone or on animal food alone. If one should ask which is the better way, it is generally admitted that a mixed diet is the best for mankind. It has been shown that those nations which subsist on a mixed diet, taking both animal and vegetable food, have accomplished most in the way of progress. Those nations which live exclusively on animal diet, such as the Esquimaux, or the peoples to the far south where vegetable material is rare and who live almost exclusively on

the fish and animals which they hunt and kill have not accomplished very much in the way of progress. On the other hand, the peoples of India, China, and Africa live mostly on a vegetable diet, and these nations have not accomplished very much either, in the way of progress. It is possible to live in either way, but as a whole, physiologists have decided that a mixed diet, combining the two forms of food material, is the best to develop the faculties to the highest degree.

It has always been known that you cannot live without food; if you do not take in food, the body loses weight, and finally dies; but until recent years not much has been known of the exact amount of food required by nature to maintain life and to keep the body in good condition. The amount is almost mathematically prescribed, and in recent years this amount has been determined. This has been learned as follows: First, it has been de-

termined in a general way how much food grown persons require. It is noted how much one person, a second, and a third eat for breakfast, dinner, and supper. This is carefully written down, and then the average amount consumed is calculated, and so we know about what amount of food is required by normal persons in health. That gives a fair indication of how much is needed.

Now, before going to the amounts required, I will say a few words about the different classes of food. While every diet must contain all the elements necessary for life, the food has been divided into three large classes, because they all contain more or less of the elements necessary for life. These three groups are the proteins, carbohydrates, and the fats. All food contains one or two, or three of these substances. In order to find out the amount of food necessarily required for living, the physiologists have calculated

how much of these three different classes we require, not saying how much bread, meat, potatoes, etc., but how much albumin, how much carbohydrate, or how much fat is required for a grown person each day. It has been found that a grown person uses up each day about:

120 gm. of albumin	=	oz. IV.
500 gm. of carbohydrate	=	oz. XVII.
60 gm. of fat	=	oz. II.

2½ to 3 quarts of water.

Water contains many mineral ingredients not found in the food. While protein must exist in the food which any individual requires for living, in some way or another, and cannot be dispensed with, either the carbohydrate or the fat can be omitted without much injury. This is to say, one of these groups can replace the other without injury to the individual for a while, but the albumin is essential. The reason for that is that the protein is the foremost substance in the body. Any tis-

sue that is used requires albumin to build it up again. The fat which is taken in helps to build up the organism; it also produces heat. Heat is also furnished by the other substances, by the protein and the carbohydrates, but as a tissue builder the protein is necessary. From protein the organism can make glycogen, fat, or muscle, but the body cannot make protein out of the carbohydrate or the fat. That is why protein is the most essential substance.

Now the physiologists, especially Rubner—who was here not long ago—who has made a great many studies and deserves to be remembered, have tried to ascertain in what degree these substances can replace each other, and found that they do it corresponding to the amount of heat which they develop. Every kind of food taken into the body is oxidized in the system. We take in oxygen with the air, and the nutritive substances become oxidized. The more carbon a special kind of

food contains, the more oxygen it can bind. The more carbon in the food, the more heat it can develop in burning up. The burnt up or oxidized compounds leave the body in the form of CO_2 and H_2O, through the lungs and kidneys.

It has been found that one gram (15 grains) of food material, if oxidized (burnt up) develops a certain amount of heat. I will explain how that is calculated. It has been arranged by the scientists to measure heat in this way: The idea is to know exactly how to estimate the heat. They have agreed to take as the measurement for one heat unit the amount of heat which is sufficient to increase the temperature of one cubic centimeter of water (16 grains) 1 degree Celsius. This is also designated as a small calorie (cal.).

In speaking of the heat values of food, however, we use great heat units, or great Cal. That means the amount of heat which is sufficient to raise 1 liter (1 quart)

of water 1 degree C. Returning to the food values, it has been found that one gram of protein is sufficient to develop 4.1 Cal. In speaking of the food unit, we do not say "great heat unit," or great Cal., but we mean that. It is written Cal.

Protein, 1 gm. develops.....4.1 Cal.
Carbohydrate, 1 gm. develops.....4.1 Cal.
Fat, 1 gm. develops.....9.3 Cal.

Notice that the fat develops more than double the amount of heat, as compared with the others.

The way foods should represent each other is by their caloric value, excepting that we cannot eliminate protein. A certain amount of protein must be in any food,—but we can combine protein with carbohydrate (as present in most vegetable foods), or we can have protein and fat as represented by animal foods. If we should have someone live on protein and fat, we would say that the fat should be

less than half the amount of carbohydrate required, for it contains so many more heat units.

Now it has been found that a man requires for one day about 2400 calories.

A man doing a considerable amount of work ordinarily consumes about:

		Caloric value
120 protein	= 120 gm. × 4.1 =	492.0
60 fat	= 60 gm. × 9.3 =	558.0
500 carbohydrate	= 500 gm. × 4.1 =	2050.0
		3100.0

It has been found generally that a grown person requires about 2500 heat units each day, or food which develops that number of heat units, when doing a moderate amount of work. If he works hard, he requires more, 3000 calories, or more. If he is in bed, he requires less. I have found that a patient in bed requires much less; he can exist on 1800 heat units without losing much flesh.

COMPOSITION OF THE MOST COMMON FOOD SUBSTANCES.

I. Dairy Products.

	Protein, per cent.	Fat, per cent.	Carbohydrate, per cent.	Calories, per 100.
Cow's milk	4.0 to 4.3	3.0 to 3.8	3.7	64
Cream	3.61	26.75	3.52	276.01
Butter	0.5	90.0	0.5	837
Whey	0.5	0.3	3.6	
Buttermilk	3.0	1.3	3.0	3.67
Kumyss (of cow's milk)	3.35	2.07	0.7 lactic acid 1.9 alcohol 0.8 carbonic acid	32.99
Cheese (cream)	25.0	30.0	3.0	394
Cheese	33.0	9.0	5.0	240
Egg	12.5	12.0	0.5	165

II. Meats and Game.

	Protein, per cent.	Fat, per cent.	Carbohydrate, per cent.	Calories, per 100.
Beef (fat)	17.19	26.38	....	315.81
Beef (lean)	20.78	1.50	....	99.15
Veal (fat)	18.88	7.41	0.07	146.61
Veal (lean)	19.84	0.82	....	86.97
Mutton (very fat)	14.80	36.39	0.05	399.31
Mutton (leaner)	17.11	5.77	....	123.81
Pork (fat)	14.54	37.34	....	406.88
Pork (lean)	20.25	6.81	....	146.36
Ham (Westphalian)	23.97	36.48	1.50	453.69
Sweetbread	22.0	0.4	....	93.92
Pulverized meat	64.5	5.24	2.28	322.53
Poultry	22.0	1.0	....	100
Spring chicken	18.49	9.34	1.20	167.59
Duck (wild)	22.65	3.11	2.33	131.36
Squab	22.14	1.00	0.76	100.07
Game	23.0	1.0	....	103.60
Hare	23.34	1.13	0.19	107.08
Venison	19.77	1.92	1.42	105.44

III. Fish.

	Protein, per cent.	Fat, per cent.	Carbohydrate, per cent.	Calories, per 100.
Pike	18.5	0.5	0.75	83.57
Carp	20.61	1.09	....	94.64
Shellfish	17.09	9.34	....	156.93
Salmon	15.01	6.42	2.85	132.93
Sardellen	22.30	2.21	0.45	113.83
Oysters	4.95	0.37	....	24
Salt herring	19.5	17.0	0.5	
Caviar	28.04	16.26	7.82	

IV. Cereals and Vegetables.

	Protein, per cent.	Fat, per cent.	Carbohydrate, per cent.	Calories, per 100.
Sago	0.5	traces	86.5	356.70
Wheat flour	8.5	1.25	73.0	345.78
Rye flour	10.0	2.0	69.0	342.50
Wheaten bread	6.0	0.75	52.0	245
Rye bread	4.5	1.0	46.0	216
Roll	6.82	0.77	43.72	213.87
Zwieback	9.5	1.0	75.0	356
Cauliflower	2.0 to 5.0	0.4	4.0	35
Carrots	1.04	0.21	6.74	33.85
Asparagus	2.0	0.3	2.5	21
Rice	5.5	1.5	76.0	348.10
Beans	19.5	2.0	52.0	311.75
Peas	19.5	2.0	54.0	319.95
Potatoes	1.5	....	20.0	88
Oatmeal	12.5	5.26	66.77	338.80
Barley meal	8.31	0.81	75.19	323
Spinach	3.49	0.58	4.44	38
Pickles	1.02	0.09	0.95	

V. Soups and Beverages.

	Protein, per cent.	Fat, per cent.	Carbohydrate, per cent.	Calories, per 100.
Milk soup with wheat flour	5.0	3.25	15.0	112
Meat broth (ordinary)	0.4	0.6		
Meat juice (pressed)	6.0 to 7.0	0.5		
Beef tea	0.5	0.5		
Leube's meat solution	9.0 to 11.0 albumin +1.79 to 6.5 peptone			
Barley soup	1.5	1.0	11.0	60.96
Malt extract	8.0 to 10.0	....	55.0	258.30
Rice pap with milk	8.8	3.5	28.6	182.61
Coffee	3.12	5.18		
Tea	12.38			
Beer	0.5	5.25	0.3	
Porter	0.7	6.0	0.3	60

VI. FRUITS.

	Free acid, per cent.	Protein, per cent.	Fat, per cent.	Carbohydrate, per cent.
Apples	0.82	0.36	....	7.22
Pears	0.20	0.36	....	3.54
Plums	1.50	0.40	....	4.68
Peaches	0.92	0.65	....	7.17
Grapes	0.79	0.59	....	1.96
Strawberries	0.93	0.54	0.45	1.01
Chestnuts	....	5.48	1.37	38.34
Sugar cane	....	....	....	3.40
Honey	....	1.20	....	5.28

Food tables have been prepared indicating how much albumin, carbohydrate, and fat each food article contains, and by using these you can know how much of each of these substances is contained in bread, meat, or vegetables and you can make out how many heat units they will develop. On the preceding pages will be found several tables of the composition of the most common food substances, showing also the heat units they contain. (Tables 1-6.)

Usually we find that all food articles contain two or three of these substances, proteins and carbohydrates, or carbohydrates, fats, and a trace of protein, etc. Animal foods contain principally protein and fat; and the vegetable foods contain carbohydrates and protein and very little fat.

On the whole, in the average diet, people take the greater amount of protein from animal food, and the greatest amount of carbohydrate from the vegetable kingdom.

The physiologists advocate taking a larger amount of protein from plants. Two-thirds of the protein ingested should be from vegetable food, and only one-third from animal food. In the majority of instances in this country and England this point is not heeded, and people take protein principally from animal food,—eating meat three times a day. This is easy for the organism, as it is not bulky and can be eaten quickly. It is the most expensive article of food, but it is not always the best, and it is apt to bring on conditions which are not good,—gouty tendencies, and disturbances of the liver, etc. For healthy living, it is rather better to choose the proteins to a great degree from the vegetable kingdom.

Next lecture our subject will be the digestibility of food, and we will see how to estimate the digestibility of what is eaten, and we will take up the subject of diet in health and diet in disease.

LECTURE II

THE DIGESTIBILITY OF FOODS, AND THE DIET IN HEALTH AND ACUTE DISEASES

We will start to-day with the subject of the digestibility of food. How can we estimate which food is easy to digest and which is not? When Beaumont had a patient with a gastric fistula, he thought he would find out about that. For at that time it was considered that the stomach was the main organ of digestion, and he thought that if food was found in the stomach after a long time it would indicate that the digestion of that food was not easy. On the other hand, he thought that if a certain article of food leaves the stomach in a short time, it would indicate that it was easy to digest. So, having this patient with a gastric fistula, he thought he would watch when the stomach

emptied after certain articles of food, and he made out a scale of the digestibility of food accordingly.

In recent years, now that we are using the stomach tube so frequently, physicians do not need to have a patient with a fistula in order to watch the time when the food leaves the stomach, but can empty or wash out a stomach after a meal and examine its contents. This has been practiced by Leube, and later by Penzoldt. They took healthy individuals, medical students who were willing to take test meals and then have lavage practiced, or a tube introduced, to find out whether or not certain foods had left the stomach. Penzoldt has arranged a table showing what time certain articles of food require for digestion in the stomach.

Most physicians think that the shorter the time required for digestion in the stomach, the easier the digestion of that article. On further reflection, however, one can see

that this is not a good gauge to go by. In reality, the main place for digestion is not the stomach, but the small intestine. The stomach prepares the food, but the actual digestion, for the greater part, takes place in the small intestine, and there the absorption occurs. Many substances leave the stomach without any change at all—the fatty substances, for instance. According to my experience, the main place for the digestion of meat is not the stomach but the intestine. The muscle fibers become swollen in the stomach, but they don't disappear. Connective tissue is one of the substances that are absorbed in the stomach. Then, we have some of the starchy substances which have already changed into sugar, which likewise are absorbed here. But everything else leaves the stomach, and enters the small intestine for further changes there. So the time the food remains in the stomach is not enough of a guide as to its digestibility.

Another plan of judging of the digestibility of food is to see whether it leaves a residue in the digestive apparatus or not—that is, whether it entirely disappears. If a certain article of food leaves a great deal of residue, and part of it passes through the entire digestive tract, it cannot be considered very digestible; while food that leaves no residue must be considered easy of digestion. So another scale has been made out according to that.

As a general rule, we can say that all animal food leaves less residue and is, in a way, more digestible than all vegetable food. All vegetable food leaves more residue, no matter what it is: seeds, nuts, etc., those vegetable foods rich in protein, that come in prepared forms—flour, meal, —leave less residue than those materials which represent other vegetables, such as roots—like potatoes—or leaves and stems that contain a great deal of cellulose matter; also most foods that grow on trees

contain a great deal of cellulose, which leaves a large amount of residue.

Of animal foods, it has been found that those meats that contain less fat are easier of digestion than those that contain a considerable amount of fat. For instance, pork takes a longer time in the stomach and also leaves more residue than beef; so you have another point on which to judge of the digestibility.

Another way of estimating the digestibility of food is by its physical character. All food before being absorbed must be changed into a liquid form. The organism cannot take up any substance unless it is in a gaseous or liquid form, or emulsified. Solid substances cannot penetrate the tissues. If we have to deal with foods that are liquid from the start, we can judge that their absorption will be much easier than that of solid substances which have to be changed into the liquid form. So you can make out a scale of the digestibility of

foods according to their physical characteristics—whether or not they are easily changed into liquids. In this way we will have in that group which is more easily digested, or Group I, liquid food; milk, broths and gruels; eggs beaten up in milk —emulsified—are easy to digest; also beef juice—the juice pressed out from the meat. Group II; liquid at body temperature: fruit jellies and meat jellies, calves-foot jelly, ice cream that melts at body temperature, butter, all these are easily digested.

Group III. Foods that are easily broken up into fine particles beforehand, such as mashed potato; or where some mechanical movement is necessary to divide the food into fine particles, already prepared, mashed, etc., powdered meat, all mashed vegetables, purees; soft boiled and poached eggs belong to the same group; bread and crackers dried and pulverized, toast and bread cut up or ground up nicely and put into some liquid.

Group IV. Foods that are not easily broken up, but still change easily and do not present too much resistance to mechanical division, such as bread, boiled potatoes and vegetables not made into purees; foods such as sweetbreads, calves' brains, and fish are a little lighter than other kinds of meat, like chicken and chops, and are easier to mash up and chew.

Group V. Where the division is a little harder. Here we have the meats that have stronger fibers. Boiled lobster does not divide up so quickly as tender meat; fruits, where a great deal of chewing is required to break them up.

Group VI. This is the hardest group—salads and raw vegetables, cheese, and foods that contain a great deal of sulphur —such as cabbage, etc.

According to these lines you can see whether a food is easily digested or not, and if you act according to this scale you

will see that it corresponds with the other scales mentioned before.

Now, speaking about diet in health, is it good for healthy persons to abstain from food substances that are not easily digestible? There are a great many persons who think that if they avoid all kinds of hard foods, and live on the finest articles, milk, eggs, soups, etc., they are better off and do not get sick, but in my opinion that is not the right way to live. It is rather advisable to harden the system. If you live on only light diet for some time, and then on some occasion have to take something else, you are liable to get sick; the digestive tract is not accustomed to it. In normal conditions, it is best to have a liberal diet and not to select foods that are easily digestible. You should rather mix your diet; take some substances that are more difficult to digest, and accustom yourself to a variety of food. If a man has

accustomed himself never to take salads and once in a while has to take some raw foods, he is likely to get sick and need some medicine. People in health should have a liberal diet, and should include some substances that are not so easily digested.

Should people eat fast or slowly? Here again the golden rule is in the middle. The food should not be eaten too fast, nor yet too slowly. One reason for that is that if you eat too slowly and are used to it, and then some day have to hurry and take a meal a little more quickly, you will get sick. Again, if your appetite is not so good, and you are used to eating slowly, you will get tired of your food and stop in the middle of a meal. I have found that severe conditions develop sometimes from eating too slowly, especially in persons who are not so well. They are imbued with the notion of eating slowly, and counting so many times before swallowing; they grow tired of eating, and their appetites are not good,

and instead of eating a good dishful they eat only a few mouthfuls; so they are not well nourished, and become nervous, etc.—all due to that habit of slow eating.

Fast eating, also, is not good. Some very disagreeable conditions develop from swallowing the food too quickly, not chewing it up and masticating it properly. It may go on for a while without apparent harm, but after a while some disagreeable conditions develop, perhaps some catarrhal condition or a functional disturbance of the digestive apparatus. So take time for your meals, but do not overdo it. Live sensibly and have a good meal, and have a little conversation with your meals, and have to wait for one dish and then another. Once in the country I asked a lady to go out for a ride with me. She said: "Before I go, I would like to have a glassful of milk." I said: "Certainly." But instead of taking a glass of milk and drinking it, she sipped and sipped, and

took a half hour to drink the milk. She suffered from headaches, and then she became my patient. She consulted me, and I knew right away what was wrong. I tried to convert her to another way of living, and succeeded, and she is much better off now. That was an instance of the evil of slow eating, and how I discovered the cause.

How many meals should a normal person have? Should we eat twice a day, three times a day, or five times a day? There are people who do all of these ways and enjoy perfect health. This question cannot be answered off-hand. I think the customs of the country in which one lives are the best guides to follow. Here in America, people eat three times a day, as a general rule—a good breakfast, a good supper—morning and night. At noon time, they are away from home, and have only a light luncheon. Two good sized meals and one small one between. The reason

for that is that they are not at their homes, are far away, and have to be satisfied with a little something at the business hour—so that is the best for them. They have their heavy meals at home, prepared to suit them, and in the middle of the day they take something to meet the requirements. People in the country, or who are at home and do not have to leave the house for their meals, usually have a smaller meal in the morning, take a good luncheon or dinner in the middle of the day, and have another small meal in the evening. Usually the morning meal is the smallest, the one in the middle of the day is the largest, and the second in size is the supper—so for them, that is all right. In Germany, they are used to taking a very small breakfast—only coffee and a roll. They eat no eggs then, but they have another breakfast at ten o'clock or half-past ten. Prof. Virchow used to lecture at 11 o'clock, and he came into his lecture room about

half after ten and had a sandwich and a glass of beer. That was his regular custom. That is their way. They take something in the morning, and then something additional a little later; then have luncheon, and again something in the afternoon at half-past three—coffee, with a little bread. They have more time there and are more sociable. They go to the cafés and restaurants, and spend some time there, and have a little chat, and then go on their way. Whether you like it or not, that is an easy way. Then they take their supper, and go out again, and later in the evening they go to a beer garden, and take a bite again. So they eat perhaps six times a day. That is not obligatory, but it is customary, and it is all right. It has a tendency to fatten them up. On this account you perhaps find more fat people in Bavaria, and Germany, than here. That used to be the way when I lived there, and it is an easy way of liv-

ing. Frequent eating and doing less work tends to corpulency, and that is what we find. In this country corpulence is not a frequent disease. Not one of you here has that characteristic. The different mode of living and eating is the reason for it. In Europe, you might find half a dozen or more fat persons among such a number.

The best way is not to change the custom of the country, but to do what others do. The majority rules. Don't try to do better than the others. Go along with them and you will be all right. That is the best rule.

Diet in Disease. We may for our purpose divide all diseases into two classes, for in these groups the diet is quite different. One, in which the disease is of an acute character and lasts only a short while. In the second group, we have to deal with chronic conditions, or diseases lasting over long periods.

We will start to-day with the diseases of short duration. Here the main point is to see that the digestive tract is not burdened with much work. The principle of rest plays the greatest part in any disease, especially in regard to diet. In any disease, no matter what—of the stomach, liver, kidneys, lungs—the organism requires rest. You have, for instance, a patient with pneumonia. He has been all right, right along, but now he is attacked with pneumonia. Here it would be wrong to prescribe plenty of nourishment. He does not need it, and you would only make him worse if you force him to take food. Nature has provided for that, and gives hints in regard to the method of procedure. When a man is taken sick, he suddenly loses his appetite and has an aversion for food, and tells you to leave him alone. That is what nature does, and it is the correct way. His body is in good nutrition, and no harm is done if in that

period of sickness—which usually lasts from three to six or seven days—he does not have food. His organism has enough material in it to utilize during that period of emergency. It is rather best to act on the principle of rest and not to burden the system with food that is not essential. Keep such a patient quiet in bed, with cold ablutions of the body or something of that sort; and left alone, the organism has a good chance to fight the disease. This principle prevails everywhere in all diseases. The patient may lose say eight or ten pounds during the disease, but as soon as the period of fever or the acute stage is over, the appetite will come back, the patient is hungry—even more so than formerly—he eats more and quickly replaces what was lost.

But while it is not essential to introduce much food into the organism during the period of acute illness, it is essential to look out for the amount of fluids in the

system. You must not say: "Give the patient nothing"—that is wrong; but you must see that he gets enough water. That is a very important point. The reason for that is that a man in good condition—a normal individual, a healthy man—if deprived of food but supplied with water, can live for twenty or thirty days upon the material supplied from the body. There are professional starvation men who practice that, and have been able to live thirty or forty days on water alone—using their bodies to live upon. At the end of that time, they resume eating and are again all right.

If in addition you take away water, however, the period of life is shortened. One can live only three or four days at the utmost without water. Why cannot a man live a little longer? He has enough in his body to live upon; there is enough flesh and fat in the body to live upon, and yet he dies. The reason for that is that there

is a shortage of water, of fluids, in the system. We use up a great deal of fluid, by respiration, perspiration, by excretion through the kidneys, etc. We lose at least two or three quarts of fluids daily in this way. If it is not there, the organism takes it from the fluids in the system, the tissues dry up, the blood thickens, and the man dies. In two days we lose six quarts, that is twelve pounds from the fluids. Then what happens? There is plenty of nutritive substance in the organism, but the blood has become thickened, the capillaries cannot work, the substances which are in the system cannot replace those which are needed, the traffic is cut off, the rivers are dried up, the vessels cannot go, and the man dies. He dies not so much from lack of food material as from lack of fluids.

In the acute diseases, the loss of fluids is increased. During fever a patient, instead of losing three quarts of fluid a day

loses four or five. If you do not see that the patient drinks, or that something is given him to replace the loss very quickly, there will be something wrong. So, while it is not necessary to introduce much food into the system during an acute illness, the necessity of introducing fluids is increased.

There is another reason why fluids are essential during the acute stage of disease. In most instances we have to deal with infections, and there are toxic substances developed through the system by bacterial action. These have to be removed from the system, and we can do this quickly if we flush the system. Give them more water than they need. They have to pass more water, and the water must reach the circulation first before it is carried off, and that washes out the system.

I will give you one instance of this, for I think that those things which really occur impress us more than anything else,

so I will tell you of something that happened to me. When I was a little boy, I was in Russia, visiting some relatives, and cholera developed there. They were anxious to send me home, as was quite natural, and the carriage was waiting for me downstairs, so I put on my overcoat; but while I was getting ready to go down, I collapsed and was attacked with the cholera, and became unconscious, vomited, etc. I had the real Asiatic cholera, so I was put to bed. I could not talk, could not do anything. There were several physicians in attendance, and they thought I was going to die. They did not give me anything; at first I was kept without anything, but when I returned to consciousness I was very thirsty, as was quite natural, but the two physicians thought differently. They called in a third physician, and he said "Give him water; if he is thirsty, let him drink." So they put a big pitcher of water next to my bed, and I

emptied it once, a second, a third time. I was drinking all the while. After a period of a week or ten days, during which I was almost dead, I began to recuperate, and you see I am still living. I think that water saved my life at that time. I am quite sure that if it had not been given to me I would not have had a chance of recovery. I want to impress upon you the necessity of giving liquids. If a patient is thirsty, let him drink. But supposing he is not thirsty, is apathetic, does not want anything, lets himself go. Is it necessary to remind him? I think it is. You must look out, even then. The fluids should be given; he should be encouraged to drink; give lemonade, Apollinaris water, barley water, etc., make him drink. If you cannot accomplish that, introduce the water into his system in some other way; through the bowels is a very good way. Give him saline injections. If he does not keep that and is very weak, and does not

drink, and there is need of fluid, you can give injections subcutaneously, under the skin, but see that there is enough fluid in the system, especially in such conditions as diarrhœa, vomiting, etc.

The principle of introducing liquids into the system to cover the loss from perspiration, etc., is of the greatest importance. While, as I have said, it is not essential to look out for the nourishment of patients in these acute illnesses, there are exceptions to this rule. For instance, you may have to deal with an elderly individual, say a patient of seventy or seventy-five. Usually such patients are not so very well nourished, people of this age usually grow thin, and cannot stand much loss, and there we cannot neglect to pay attention to the food, even in that short period, but see that they take food that is easily digested. Give them milk, say every two or three hours, decoctions of barley water, etc. Long ago Hippocrates understood this, and

gave his patients the ptisan, which is a decoction of barley water and sugar. Sugar is a good nutritive material. He treated febrile cases by cutting off food and giving them barley water and honey.

For the next lecture we will take up the second group of diseases, and we will consider first the subject of diet in more prolonged acute diseases, such as typhoid fever, etc.

LECTURE III

THE DIET IN ACUTE DISEASES OF PROLONGED DURATION AND IN CHRONIC DISEASES

Proceeding with the subject of diet, we will to-day take up the question of diet in typhoid fever, which is one of the acute diseases that often lasts for a long period of time, and requires special attention. In former times, up to about seventy-five years ago, it was the tendency of the medical profession to withhold nourishment from patients with typhoid fever and to give them as little as possible, and that little only in liquid form. The teachings of Hippocrates prevailed especially with regard to this terrible disease, and these patients would get only a little weak tea or barley water; even milk was kept away from them as it was considered a form of

nourishment which might disturb them too much. So the starvation plan was carried out in this disease also, up to the time of convalescence.

The renowned clinician, Dr. Graves, of Great Britain, was the first one to try to introduce some reform in the treatment and management of typhoid fever in regard to diet. He thought that the starvation method was not a good way to treat these patients and that perhaps a great many of them died from lack of nutrition —not so much from the fever as from the lack of nourishment—the body being unable to fight the disease. So he thought he would give these patients light nourishment, and he gave them milk, which is a liquid food that is easily digested. He was the first one to make use of milk in the dietary of typhoid fever in a considerable degree—to give them a good amount of milk. That theory was combated by the clinicians of that day; many thought that

he killed his patients, and like all innovators he had a great many enemies. The profession was not ready to accept the great change of giving milk to patients with typhoid fever. Graves fought his battle, however, and finally carried it through. In the meantime, many physicians more and more adopted his plan. Dr. Graves was so proud of this reform of introducing milk into the diet of typhoid fever that in his will he left directions that his tomb should be inscribed: "He fed fevers."

That was the first article of food that was added to the dietary of typhoid fever patients for many years; they were kept on a diet consisting of milk, broths, and gruels. Then came another current from Russia. There are a few clinicians there who tried giving typhoid fever patients an ordinary diet, solid food—anything. I do not remember the name of the man who first introduced this treatment,

but at any rate some of the physicians took up the plan of treating these patients with the ordinary food—bread, meat, and vegetables—and still they reported results that were not worse than if the patients were treated with very fine food in their diet. They claimed that their patients thrived, felt stronger and better, and got over the disease just as well. Now, you will ask, what shall we do?

In my opinion, we should not give the patient the ordinary daily food. That would be too radical a change. But their experience has shown that we need not be too much afraid of introducing a little more food into the dietary of these patients, and that typhoid fever patients need not always be restricted to strictly liquid food. We may give them a semi-solid diet, and perhaps in some cases may give a little solid food.

Now another point has emanated from this country. I think the beginning of

this was in Germany, but it was not carried out to the extent to which it has been followed out in this country. A great many years ago, Prof. Leyden, of Berlin, who has done so much for the dietetic treatment of diseases, was of the opinion that with typhoid patients, or any patients with fever who lose so much flesh, we might by increasing the nourishment, be able to check the loss. It has been for quite a while a subject of controversy as to whether this could be done. In such fevers, the expenses of the body are increased and the intake is diminished, and it was a question as to whether the digestive system would be able to take up the food, which would balance or outbalance the loss. That question had not been decided until Dr. Warren Coleman of this city took it up and carried the point so far as to prove that you can give a typhoid fever patient enough nourishment to prevent him from losing flesh. Some-

times you can even make him gain during the febrile period. It is, therefore, only a question of the quantity of nourishment introduced, whether he loses or not. Dr. Coleman of Bellevue Hospital really did a great deal of meritorious work in this line.

Some years ago I tried to nourish some of these patients in the German Hospital, giving them larger amounts of food. We gave them milk and added raw eggs—three or four a day, beaten up in the milk and strained. Dr. Coleman gives still more. He adds cream to the milk, increases the liquids and gives sugar of milk—that is, sugar that is not so sweet. It can be put in the milk or in lemonade and makes a very agreeable drink; and at the same time increases the amount of nourishment, as it contains a large amount of carbohydrate. If you give a tablespoonful of lactose you have sixty calories, and you can put two tablespoonfuls in a glass

of lemonade or milk and thus furnish 120 calories. If you give eight ounces of milk with two tablespoonfuls of lactose, and give that eight times a day, you get a fair amount of fluid of nutritive value. Dr. Coleman also gives his patients eggs, farina, rice, and toast. He is not so careful in abstaining from solid food, and gives practically a liquid and semi-solid diet. If milk is not well-borne, we have to give other things, barley, broths, and eggs, and so have a good variety.

Last fall I had a patient from out of town with typhoid fever. He had lost twenty pounds of flesh and had headaches, but no one had made a diagnosis of the condition. He came to me for a diagnosis, for everyone thought he had some stomach trouble. He complained of indigestion and his appetite was poor. He was kept in the hospital under observation for a day or two, and we found that he had some temperature, and then the diag-

nosis was easy. His previous examinations had been made at a very early stage. In that beginning period before he had high fever, he had lost twenty pounds. When he came into the hospital he said that he could not stand milk, that it disagreed with him. So I started him on plenty of lemonade with milk sugar, and gave him eight or ten eggs a day beaten up with barley decoctions, and butter in addition. That man did not lose another pound during the entire course of his typhoid fever. As soon as the fever was over the nourishment was pushed further, and he gained right away, and we sent him home with a gain of fifteen or twenty pounds. That was an example of what can be done with diet in typhoid fever for a patient who cannot stand milk. If he had been able to take that, it would have been still easier to give him nourishment.

In typhoid fever, too, on account of the length of its course, see that the patient

takes food say every two hours. Give him lemonade, grapefruit, good chicken soup, a little ice cream—that is very refreshing and good. The same principle will apply to diseases of any duration accompanied with fever.

Now we will take up the diet in chronic affections not accompanied with fever. The principle which prevails here is just the reverse of that adapted for diseases of acute and short duration. In those we said that we need give no attention to the amount of nourishment taken. It does not matter that the patient takes no food for a short time; he will get over the disease quickly. In diseases of a chronic nature the first principle is to see that the patient takes enough nourishment; for unless he gets sufficient nutrition it does not matter what else you may do—the diet may agree, the medicine, etc., be just right —but the patient will go down. He is bound to lose. He grows weaker, and

finally succumbs not so much to the disease as to subnutrition. No matter what type of disease they have, they will get tired of the diet. If you do not pay a great deal of attention to them, and especially if the diet is restricted too much—say milk and eggs, and chicken soup, and nothing else—in a week or two they get tired of it, and do not enjoy it, and the tongue gets coated, and they take less, and grow weaker. So you have to see that you give the patients enough nourishment. This principle comes first in the plan of treatment, no matter what the disease is.

If you have to deal, for instance, with tuberculosis patients, who form a large class of these chronic sufferers—if you are not attentive in seeing that they take nourishment,—they will take less and less; they have a little fever off and on, and may have some catarrhal condition of the stomach or some catarrh of the bowels and not feel like eating. They are in a state of

starvation, and very often they succumb to that. I will tell you of a case to show what can be done with proper nutrition in these cases. I was once called to a patient, a lady with lung trouble, who had suffered with diarrhœa. Almost anything she took caused the bowels to move right away. The treatment she had been having consisted in keeping from her all kinds of food. She had only a little warm broth and perhaps two eggs. She had lost a great deal of flesh and looked like a skeleton, and had high fever, and the question was what could be done for her. When I got there I saw that she would die in no time, two or three weeks, perhaps, unless the plan of diet was changed. So I said we must give her nourishment, diarrhœa or no diarrhœa. We must put in food. It is better to put in and lose something, than not to put in at all. So we began to feed her. We gave her six or eight eggs a day, farina with milk, rice with milk; and in a

few days we started in with meat and mashed potatoes, and we fed her five or six times a day. She had a nurse to watch her and push the feeding, and make her take the food; and by and by she began to rally, and in a short while she lost her temperature, and her bowels were better, and she began to go out, and gained thirty or forty pounds, and it was three or four years before the lung trouble again asserted itself and she died.

If there is subnutrition existing, you have to step in and work against it. You may say that the bowels are weak and cannot stand anything. You must try. I do not mean to say that you should not give any remedies. That lady, besides the diet treatment, had some remedies to bridge over the symptoms. If there is diarrhœa, we will give them some tannigen, bismuth, and a little codein, but they must eat at the same time.

It is very much the same in other

chronic conditions—gout, chronic rheumatism, chronic Bright's disease—which is a very common complaint. Here the diet is often too one-sided. A great many physicians give milk and milk alone in kidney troubles because, as you know, the kidneys are not able to keep back albumin and make use of it; and the principle is to keep away the proteid foods as much as possible in order to save the organ. But if the diet is too one-sided, if the patient takes too little and does not enjoy it, he suffers from inanition, which is worse than the disease.

In these chronic diseases you can pay attention in the plan of treatment to the work of the organ, to its function, to see that its diet should not be too heavy for the particular patient. In kidney trouble you will try to eliminate the protein to some extent; give only a little meat, but the principle should not be carried to the extreme; you must give in a little and

adapt the diet in such a manner that there will be a variety in the food, and the patient will enjoy it. Give them all the cereals and breads and a little meat. Restrict the particular article that you do not want, but do not cut it out entirely. The same way with diabetes mellitus—or sugar disease. We know that sugar is not well-borne; the system cannot use it up, and eliminates it through the kidneys. So, as a rule, we put these patients on animal diet, and cut off starchy foods; but if you take these away entirely the patient gets tired of the animal food and grows weak and runs down. Most physicians to-day agree that it is well to give them a little starchy food; the system is better off with a mixed diet; but restrict the undesirable kind. Give them only two rolls a day.

A restricted diet can be carried out without harm for a short period of time. You may institute a milk diet for a week or two

without harm, but to carry it on too far is always a mistake. The system is apt to suffer from a one-sided diet, no matter what the disease is.

After these points on diet in chronic diseases, we will go on to the diet in diseases of the digestive tract. With these, on the whole, the same principles prevail as in the other diseases. Acute conditions require little attention to diet. The diet should consist of the finest foods in liquid form and in small quantities. We do not have to look out for large amounts to cover the loss, and we act on that principle.

Acute indigestion, for instance. Some one has taken too large a dinner, has fever, and vomits. What will you do with the patient? The best thing is to do as little as possible. Leave him alone. He has no appetite, and does not eat for a day or two. That is all right. There will be no bad consequences. In a day or two the bad condition will be over and he will be-

gin to eat again. If, however, the patient is in a much reduced condition, and not well nourished, you will have to give some nourishment—clam broth, milk, tea and sugar. Give them light nourishment, and they will get better.

The same obtains in diseases of the bowels—for instance, in severe diarrhœa. Leave the patients alone. Give them a little tea, warm soup, until the acute attack has subsided, and then begin to nourish them again.

The chronic diseases of the digestive tract may be divided into two large groups —one in which there is organic disease present, like ulcer or cancer; and the other in which there are mild inflammatory conditions, catarrh, etc., or functional disturbances present.

In regard to organic disease, ulcer of the stomach, for instance, there we make a division between the two stages—the acute state of the ulcer where there are

more pronounced symptoms, severe pain and vomiting; and the chronic stage, the period of acquiescence, where the condition is not so active. The treatment must be different in the two periods. In the acute stage, again rest is the principal thing. If the patient has a hemorrhage, keep him on rectal alimentation—practically starvation, and saline injections; some of the fluid is taken up by the system; perhaps one-third or a quarter of the nutritive material introduced through the bowel can be taken up, but it is essential that the digestive tract should rest for five or six days. Then begin with mild liquid diet by mouth, or duodenal feeding. That represents a method of feeding which covers the losses and gives rest to the stomach.

But when the acute stage is over and the chronic form has begun, then you have to look out for a sufficient amount of food. The food should not, however, be too ir-

ritating to the system. In cancer of the stomach we have to look out that the patient is well nourished, and we give him fine articles of food, and if it is impossible to put the food in the stomach normally, as in cancer of the pylorus, a gastroenterostomy is done to make nourishment possible; but again we have to see that the food given does not irritate the particular disease. A patient with cancer cannot stand the ordinary food, but we have to give him as much of a light food as we can, and as long as we can.

In the second group of cases, the functional diseases of the stomach and intestines, it is very important to feed them properly. Formerly the principle prevailed that all dyspeptic individuals should be put on a diet, and by that was meant very little of the finest food—a milk diet, or soup, or perhaps a little meat. There was a physician in the city who used to give his patients meat and broth, and per-

haps a few slices of toast—nothing else; and that particular diet was carried out with a great many patients, sometimes with some benefit, but oftentimes with a great deal of harm. In Germany to-day that theory of dieting a patient still prevails, more so than I like. I often have such patients come to me, and I tell them to go ahead and eat like other people, only to exclude this or that; and by and by they come to me and ask if they should not be put on a diet,—meaning to be kept away from food. But in my opinion, that is the worst thing for them to do.

It is my conviction that the principle that prevailed in former years—of putting every patient with dyspeptic symptoms on a restricted diet—was a wrong one. A great many persons who suffer from minor ailments of the digestive system keep away from food. Many physicians think that starchy foods are harmful for such patients, and forbid

them to take bread and potatoes. All vegetables contain starchy food, so they are allowed only a little bread and perhaps only a little meat, and they do not enjoy their food, and symptoms of inanition develop, and many of these invalids ultimately die of improper feeding.

The proper principle is not to forbid anything but what is sure to cause harm. Everything else should be allowed. These patients should be given great liberty in their diet, because it is of the greatest importance to look out that these chronic dyspeptics get a sufficient amount of food. That is the principle upon which I act, and the more I practise it the more am I convinced that it is the right way of treating these patients.

One of my patients was a physician from Texas who had some dyspeptic troubles, and he got worse and worse, until he had lost forty pounds of flesh, and finally had to give up his practice on account of

his inability to take food. He came to this city, where he had a good friend, a nerve specialist, who invited him to stay with him at his summer residence in Greenwich and offered to look after him; but the man continued to grow wórse. He could not take any food, and still lost flesh, and having had to give up his business he was constantly worrying, and his nervous symptoms did not improve. Finally he came to me for advice, and began by telling his story. He could not take any toast, for that caused symptoms right away; he could not take meat, for it made him vomit; he could not take that, for it gave him a headache, and so on—he could not take anything. He thought that I was going to be guided by his opinion, but he was mistaken; if I had done that, he would be dead now. I told him that if he wanted to be treated by me, he would have to do as I directed, and leave his own opinions alone. So we began. His disease as such

did not amount to much. He had an atonically dilated stomach, and was in a run-down condition, but had no organic disease. We began to feed him, and I had to make him eat contrary to his own convictions. I had to give him bromides at first, to act as a sedative, but he did as I said, and began to eat, and he regained his flesh, and is now practising as before, and is convinced that he can eat everything.

A great fear of food—"sitophobia"—develops in many of these dyspeptics, perhaps because of some disturbances they had experienced and because they have been told to keep away from all kinds of food, and when they do take it that fear gives them more symptoms, so that the patient is worse if he has to eat something; he is afraid to sit at the table, and certainly he must suffer. That condition must be combated—the aversion to the sight of food. You must tell them that even if there is some pain, they must take

the food and get out of that condition. It is better to eat and suffer than not to eat and not to suffer. You cannot live without food. That is the first and foremost principle.

LECTURE IV

THE DIET IN CHRONIC AFFECTIONS OF THE DIGESTIVE TRACT (CONTINUED)

To-day we will continue with the subject of diet in the treatment of diseases of the digestive organs, of a chronic nature. I mentioned in my last lecture that severe illness and organic affections have to be treated differently in regard to diet from those troubles which are more or less of a functional character, and which are in the majority.

We will subdivide this large class of functional disturbances, taking the stomach first, into three divisions:—one in which the gastric secretions are increased (hyperacidity); the second, in which gastric secretions are normal, and third, in which they are diminished (hypoacidity).

In hyperacidity—too much acidity, too much gastric juice—we again have several subdivisions: One, continuous hypersecretion and the other, increased secretion during digestion, *i. e.*, digestive hypersecretion.

The second large group is that of rather normal secretion and the third, is diminished secretion, or absent secretion. We have to deal with all of these conditions. First, we will take the group in which the gastric secretion is increased, which in my experience forms more than half, or about half, of most functional diseases of the stomach. Up to within recent years, the diet question in the class of cases where the acid secretion is increased has been in a rather unsettled state. There are a great many physicians of repute who maintain that all starchy food should be forbidden to these patients, because it has been found that the symptoms in these cases are rather increased after the inges-

tion of starchy foods. The physicians who represent that idea have gone so far as to designate this class of cases as "starchy dyspepsia," or "amylaceous dyspepsia," indicating that they ascribe so much importance to this particular thing that they found it worthy to name it in this way—and have arranged the diet accordingly. According to these physicians, the diet for hyperchlorhydria consists in allowing meats and fats, taking away entirely the carbohydrates. The Salisbury régime, which I have mentioned before—meat, broths, and little toast—is also representative of that idea—the starch-free diet.

Now while it is found that a patient with hyperchlorhydria when put upon, say, eggs, and a little meat and nothing else may be relieved of his symptoms—may lose his pain, belch less, and may be more comfortable—while all this is true at first, I do not think a real cure will take place if that diet is extended too long.

Now, again, there are a number of physicians who represent the opposite view. Pawlow, the St. Petersburg physiologist, has made many experiments on animals, with the stomach arranged so that it can be looked into and examined, and has found that meat and all nitrogenous foods have a tendency to increase the flow of gastric juice, while vegetables, the carbohydrates, and fats have a tendency to diminish gastric secretion. This led the way to a second arrangement of the food in cases of hyperchlorhydria. These physicians said that if we give these patients a diet rich in animal food, the gastric secretion is increased and the stomach is overstimulated. So they have started the opposite principle of feeding, and say that we should keep away all animal food from patients with hyperchlorhydria, and give them a strictly vegetable diet, with butter.

Both parties show successes in their

treatment; both have their failures—which is quite natural, like everything else. Now, the question is, what shall you do. If you read the books, one will forbid all starchy food to these persons; almost all vegetables too. The other will teach just the opposite for the same class of cases. My answer to this is that neither of them is altogether right; for, as I told you a week or two ago, any diet that is arranged for a long period of time must contain all the three groups of nourishment we need—proteins, carbohydrates, and fats. While we can arrange a diet, a bill of fare, in such a manner that one group should predominate and the others be lessened, we cannot exclude any one of these three cardinal nutritious groups from any diet. That is a cardinal point. We must give a patient all these three things; but where there is too much secretion a starchy food is not so well used up, and you can give that patient less starchy food, and more

fat and albuminates. So, in actual practice, in these cases of hyperchlorhydria, I give them meat in a large amount and fats, and diminish the starchy food. I tell them that they should not eat too many potatoes, put no restriction on bread—for that is such an important article of food, and if some patients do not eat bread they cannot eat anything—and give them all plenty of butter.

The reason why starch can be given to these patients is, first, that even if it does not change so quickly (the acid gastric secretion when reaching a certain height, checks the ptyalin action of the saliva, in the stomach), the pancreatic juice contains a very active ferment for the conversion of starch into sugar and ferments for the conversion of fats and albuminates; and if the starch digestion is inhibited in the stomach it will be finished further on in the digestive tract. Another reason is that if the acidity is so great as to prevent the

change of starch into sugar, we can give these patients alkalies to diminish the acidity, and that is better than to take away the starch; it is better to give a remedy than to take away the food.

So the diet in these cases of hyperchlorhydria should be a liberal one, but we must take away all highly spiced substances, and do not give them too much of the tougher meats, such as beef, pork, venison, but a liberal diet of chicken, lamb chops, or the tender meats, and plenty of milk, butter and eggs, bread and cereals, but restrict potatoes and other starchy substances.

We will now consider those cases where there is continuous hypersecretion, the group in which the stomach continues to secrete juice even if there is no food present. Usually we find this condition in ulcers of the pylorus; rarely, in cases of neurotic disturbances, either due to organic nervous diseases, central lesions, or sometimes merely functional in character.

What will you do in this group? Here frequent eating is of great importance. Try to make use of the gastric juice which is given by the stomach anyway. It irritates the mucous membrane and makes the patient uncomfortable—but if you put in some food, and especially albuminates which have a tendency to enter into combination with the acid—the acidity in the stomach is diminished and that gives them relief. These patients tell you that they have pain three hours after eating. If they eat, the pain is better. The acidity is reduced by the ingestion of food. The water and the albuminates in the food bind the acid, so that it is not only diminished (diluted) but some is taken away (partly neutralized). Some of these patients wake up early in the morning. The acidity is too great for the stomach. If they put in food—eat breakfast, they feel all right. So frequent eating is a cardinal point in the treatment of these cases.

Fats have a tendency to inhibit gastric secretion, and are to be recommended in all these classes of hyperchlorhydria, and continuous hypersecretion.

Now, we will take up the cases in which the gastric secretion is normal. The symptoms may be of a high character. The patient complains of all kinds of things—pain, eructations, loss of appetite, etc. This is the group designated as nervous dyspepsia. The symptoms are distressing, but still we find nothing radically wrong. We cannot find any deviation from the normal, and still the patient complains, and so we ascribe the condition to some nervous phenomena which we do not exactly understand. These cases have to be treated differently. They can eat anything, and should be made to eat everything; they should be given a liberal diet; no restrictions at all in these cases. Very often these patients with nervous dyspepsia eat lightly, and if kept away from food they

would never get well; but if you change their habits of eating, the change should not be made too abruptly. If patients have been on a strict diet for a long time, you cannot bring on a change in a day. A patient who has been living on milk and crackers for two years if put at the table and given a good meal—even if the stomach is good—will have trouble. The stomach is not used to it. You should take a few days, or even a week, and gradually change the diet, until the patient is put in such a condition that he eats everything. All of these cases of nervous dyspepsia should eat everything, but make the change to the regular way of living slowly.

Now, we come to the third group, in which just the reverse of the first group exists; the gastric secretion is diminished—and ultimately we will take the group in which there is no gastric juice at all.

In chronic gastric catarrh there is a diminution of the acidity, and in func-

tional nervous disorders, disorders of a depressed character, the stomach works poorly and the acidity is diminished. In all these cases the vegetable foods should predominate, and not much meat should be given. Meat should be restricted, and fats as such should not be given in large quantities, for they have a tendency to inhibit secretion. Meat, on the other hand, has a tendency to increase secretion, but if too much is given it creates a disturbance—so we give enough meat, and less fat.

Now, all these questions have been worked out by the physiologists, but we cannot take their findings right away into the clinic and say, "We go according to them." It is only if they have been proven to do good in practice that we can adopt them. Until then, we cannot go by them alone. In Germany especially, many clinicians act too much on these physiological experiments. They at once give a diet

according to these rules. But that is not the best way. It is best to go by what we find to be of clinical value, and to leave the theories, as such, alone. If we find something practical, and this corresponds to a certain physiological theory, so much the better.

Now we come to the class of cases in which there is no gastric secretion, achylia gastrica. That is a large group. These patients have no organic disease, and yet have distressing symptoms. It is the result of something else. The condition is easily managed, and the dietetic treatment here plays a great part. The food is changed very little in the stomach in these cases, for there is no gastric juice. Not only the albuminates but also the starch and fats are unchanged. Starch as such would change in such a stomach, but the starch is usually enclosed in a membrane of plant albumin, and this little membrane or coating which surrounds the starch is

usually opened by the gastric juice; but in cases of achylia there is no gastric juice, and the ptyalin cannot reach the starch and enter it; and that is the reason why starch cannot change in cases of achylia. If you want the starch changed, you must see that the particles of food are entirely broken up, pulverized almost; that has a tendency to open up the little cells in such a way as to reach the secretion.

Another reason why these patients should have their food prepared in a finely divided form is again the circumstance that there is nothing in the stomach to help the dissolution of these particles. Normally, the gastric juice dissolves the connective tissue surrounding the meat and prepares it for further digestion in the intestine. In a case of achylia gastrica the meat which is swallowed remains unchanged until it reaches the duodenum.

The connective tissue surrounding the meat fibers does not disappear, and it

reaches the duodenum in the same shape in which it was ingested. It looks as if it had been masticated and spit out. Some of you have seen me take out such stomach contents exactly as if it had been chewed a little and then brought out. So the mechanical division of the food is important in these patients with achylia. If the food comes into the duodenum unchanged it creates symptoms—pain, etc., and the patients suffer from catarrh of the bowels, frequently causing constipation alternating with diarrhea. Not only in the stomach but also in the intestines the food continues to be an irritant.

So the foods in these cases should be finely divided mechanically. Accordingly we give these patients cereals in fine form, pea soup, lentil soup, mashed potatoes, raw and soft boiled eggs. If you give them hard boiled eggs, they will remain in the stomach, but raw eggs which are semi-liquid will slip through. We give these

patients very little meat, for the reasons which I have already mentioned. I have found very often that by such a strict diet of liquid and semi-solid food—they must be told to masticate their food well—that they can get along very well. The diet brings on a great improvement.

But shall we let these patients continue on such a diet indefinitely? No. The principle to which I have already referred is important not only in the other groups but here also—that a diet deviating much from the normal should not be kept up indefinitely. Our tendency should be to strengthen the digestive tract and harden it, and bring it to such a state that it can manage normal food. No matter whether the constitutional condition is changed or not—we may not be able to remove it, but if we can change the patient's manner of living so that he can live like other people, —we have attained what we want. We want to take the patient away from inva-

lidism, and from anything that tends to keep him in that condition.

Here too, in achylia gastrica, while at first we are strict in having these patients live on fine foods, step by step we introduce other things, and arrange so that in time they can digest ordinary diet. It takes time—a month, perhaps two or three months,—but that should be the aim. I usually find that these patients with achylia can live twenty, thirty, or forty years, and even become normal individuals. If you can bring them to a state where they can enjoy a normal meal, they are practically well. The intestine is strengthened in such a way that it learns to do the work which the stomach ought to do. That can be done by a gradual change of diet, increasing it step by step. This principle must extend to all chronic conditions.

Another point of great importance. Many of these dyspeptic individuals—no

matter what the character of their digestive disease—have been forbidden a great deal, and have lived with so little nourishment that they are in a condition of subnutrition. They are run down, and cannot do anything; they lead lives of invalidism, lie on a lounge, etc., and many of them gradually die of starvation. The nerves are not nourished; all the organism is in a state of inanition, like a business in which there is too little money. Such a business cannot go on well. So with the organism. If the body has not enough food, it takes a little of its own fat and muscle, and that will not do. That is what these patients really represent. They are dizzy and have no appetite, and are weak—all symptoms of inanition. If we treat these patients by giving them a diet on which they have just enough to lead their existence, they will never get well, for they remain in that weakened condition. But if we can feed them up—

increase their diet, give them more food than they need, build them up—we can get them well. The question in all these cases is—can you do it? My answer would be that in nine cases out of ten, or perhaps still more, you can do it, provided there is no organic lesion present—no cancer, no obstruction; simply a lack of nutrition, some functional disturbance. From my experience, I would say that in more than nine cases out of ten you can succeed in changing such an individual and building him up.

The question is: How to do it? I answer: First change the diet, and change it gradually, as I said before. You cannot do it in a day. The intention is to have the diet similar to what the patient has been having, only we make it more nutritious gradually. Suppose you have succeeded in changing it and the patient now takes three meals a day, and you want him to gain flesh. This applies not only

to diseased individuals, but to any one. We have a number of thin persons here, some of whom might like to gain a little flesh. Some one may want to gain, but he says, "my family is thin, we are all thin; I cannot do anything." That is what people usually say: "We are all thin; that is the way we grew up."

But such people can be made stouter. We can make them gain if they carry out what is needed. Such a person takes for breakfast, say a cup of coffee, an egg, and a roll. If we want him to gain, we must try to make this bill of fare more nutritive. Instead of coffee, we say, take two parts of milk and one part of coffee; then he has more milk. Then we tell him to take a great deal of butter on his bread, and to take two eggs instead of one, and butter with them. Then for lunch, do the same way. Make the foods which he has been taking more nutritious, take more cream, more sugar. If the patient has been just

maintaining his weight all the time on his former diet, make the drinks more nutritious. In a week or two he will report that he has gained a pound; if he keeps it up, he will gain more—if he keeps up the same amount of work. Now he begins to take more milk and more butter. What he does not need to maintain his balance goes to make more flesh. If you want some one to gain and he has been walking three miles a day, and it is essential that he should gain weight, have him take between meals a glass of milk and bread and butter. At first he will tell you that his appetite is not so good for the next meal, but he will soon get used to it. That is practically the way I proceed with these patients where it is necessary to build them up. Have them take their regular meals, and add two small meals in between. I lay much stress on the amount of butter. Tell them to eat a quarter of a pound of butter a day. A quarter of a pound of

butter contains almost a thousand heat units. If he eats a quarter of a pound of butter a day, he has a thousand heat units added, which he does not need for living, and it goes into fat. Butter is easily taken up—you can put it in oatmeal, eggs, on bread, etc. The patient enjoys it, and eats more. So butter is a very important article of food, in those cases, where it is essential to increase the body weight, and it is essential in many instances.

If a man is all right, leads an active life, that is all right. But if he is very thin, barely covers his expenses, if he gets sick he has not much to draw upon, so it is well to have a reserve fund of flesh to draw upon.

The same principle can be turned around. Normally, we should be just right—not too stout, not too thin. There should be harmony and symmetry, and if a person looks just right, you can judge by the appearance that he is all right.

But if you grow clumsy and can hardly move about, that is not well. Can you reduce the weight of such persons by diet? Yes. But here again is a point of great importance, that is, exercise. If you have a stout fellow taking food that just keeps him in his balance—he does not gain and he does not lose, and you want him to lose and still you do not want him to reduce his bill of fare too much, for if you make him take too little he may have some heart complications—increase his exercise. If he is used to walking two miles a day, make him walk three or four, and then five, or make him climb a mountain, and with the same food he begins to lose gradually. That is the best way of reducing flesh; but if you see that he is eating too much, eats enough for three people, then reduce his food. Instead of taking milk, give him coffee and tea for breakfast, and take away the butter; and if he eats between meals, tell him to have three meals instead of

five. Treat him the opposite way from the management of increasing weight and you can succeed in reducing flesh.

People can increase or diminish bodily weight at will, provided these instructions are carried out. It is far more difficult, however, to make a stout man thin than to make a thin man stout, because what you want is not to the fancy of the corpulent man, though it is all right for the thin man, for he soon learns to enjoy his food. But the stout man does not want to give up his butter, and keeps on eating a little more than he needs. Otherwise it would be as easy to reduce as to fatten an individual. You can succeed even here in nine cases out of ten, provided all the instructions are rigidly carried out.

LECTURE V

THE DIETETIC TREATMENT OF CHRONIC DIARRHŒAS *

I HAVE selected the dietetic treatment of chronic diarrhœa because this subject of diet is an important one in all diseases, and particularly so in affections of the digestive tract, as there we have to deal with an apparatus which is arranged to sustain the organism.

In order to discuss this subject of dietetic management of chronic diarrhœa, it would be well to divide its forms into different classes. 1, Diarrhœa due to chronic intestinal obstruction; 2, nervous diarrhœa; and 3, chronic diarrhœa, due to catarrh of the small intestine principally, sometimes also accompanied by a catarrhal condition

* *New York Med. Journal*, Feb. 10, 1906.

of the colon. Most forms of chronic diarrhœa principally involve the small intestine; and this group can again be subdivided into 1, primary catarrh; 2, catarrh depending upon abnormalities of gastric secretion; and 3, catarrh accompanying ulceration.

In the treatment of all these types of diarrhœa it is primarily important that we should make use of those foods which are nonirritating and which leave little residue. They must not irritate the bowel mechanically nor chemically, nor must they be very cold when ingested.

The special treatment of each class will call for a difference in the dietetic regime. In chronic intestinal obstruction, so long as the patient is not operated on and the obstruction exists, the first principle will be that the diet should be a liquid one. This liquid diet will have to be maintained because solid food will not pass through the narrowed canal. It will be vomited

and will aggravate the symptoms. We may give milk, raw eggs, and different kinds of broths and meat juices, but this will be all which we may allow. Variations to improve the taste, and bring more variety into the menu may be introduced, but in the main the foods will remain the same.

A reverse course must be adopted in that form of diarrhœa which is of nervous origin. In this disorder, as far as we know, there is really no anatomical lesion to be found. It is simply a functional disease, and the chief feature of this type of diarrhœa is that nervous phenomena accompany it and also bring it on. This means that in addition to a diarrhœa the patient also manifests other nervous symptoms. He perhaps cannot sleep well, his appetite is capricious, and then the diarrhœa itself also manifests a character which shows its nervous origin. The patient will have a movement of the bowels principally after

meals, or when he will have to meet a very important engagement; a professor before giving a lecture will have to excuse himself and leave the room, indicating that the state of mind has something to do with the movement of the bowels.

In these cases the whole management should be different from those which are due to anatomical lesions in the intestines. The diet, too, must therefore be arranged accordingly. It will not have to be such a rigorous one. We will have to make the patient eat almost everything. Even those foods which leave a residue do not play much part. I remember I had to treat a physician in this city who had this kind of a diarrhœa. He had to excuse himself after finishing each meal. The main treatment is that the patient should try and suppress these movements, i. e., not to run to the toilet as often as he feels inclined, and besides other means, nerve sedatives. The diet should not be re-

stricted; food of a laxative nature, however, should be avoided; otherwise these patients can eat everything.

Now we come to that class of diarrhœa which is due to disturbances of the stomach. This is a group which has been recognized only in the last seventeen years. We have learned to know that there are forms of diarrhœa in which the small and large intestines are not very much involved, but in which we find abnormal conditions in the stomach itself, and if we try to arrange a treatment suitable to the derangement of the stomach, the diarrhœa as such can be neglected and still will be cured.

There are two lesions in the stomach, functional disturbances, which form the greater part of this class of diarrhœas. One is the form which is called achylia gastrica, in which there is no gastric juice whereby the stomach does not digest albuminoid foods. Here the food enters the

intestine practically unchanged, and thus irritates the bowel, causing the diarrhœa, at least in some cases. Achylia gastrica is not always accompanied by diarrhœa. I think, on the contrary, that more than one half of the cases are accompanied with extreme constipation, but about one third of these cases of achylia gastrica are troubled with obstinate diarrhœa, and this diarrhœa is probably due to mechanical irritation within the small intestine.

Diarrhœa may also be brought on by just the reverse condition, i. e., one in which there is too much secretion and too much acidity in the stomach. Here it is not the mechanical irritation but most likely the acid itself which exerts an irritating stimulus on the intestinal mucosa, which leads to the diarrhœa. This class, however, is a small one. Most patients who suffer from hyperchlorhydria suffer from constipation, and only a small fraction suffer from diarrhœa, but we must re-

member that such a group exists, as sometimes they may be cured by alkalies.

In these two groups, in which the diarrhœa is dependent upon a gastric anomaly, the entire treatment, medicinal and dietetic, will have to be arranged to suit the stomach. In the patients with achylia gastrica we find it expedient empirically, not merely theoretically, to exclude proteids from the diet. Such patients do much better on a diet which contains little meat or no meat at all. They should live on a vegetarian diet. A vegetable diet is inclined, as a rule, to predispose to diarrhœa, but in this group of cases it is just the remedy. If one keeps a patient on gruels and perhaps on nicely divided articles of food, milk, kumyss, later on bread and butter and omits meat entirely for a time, we will find that in a few weeks he will not suffer so much from the diarrhœa. I think this to be the experience of almost all the physicians who handle these cases. Ac-

cording to my experience, however, it is not necessary to institute a rigorous diet nor to avoid meats altogether for a very long period. If we give the patient finely divided foods for a few weeks, at first liquid, then semi-liquid foods, we can then after a time begin to allow foods a little coarser, bread, vermicelli, barley, rice, and later on meat. We will find that the bowels will gradually get accustomed to these foods, even if they do not get into the intestine in so finely divided a state. These patients should masticate their food carefully. This is more important here than in any other class of stomach derangements. These patients do well on starchy foods.

Diarrhœa, if due to a condition of hyperchlorhydria, will have to be managed quite differently. Here meats, a richly albuminous diet, will play an important part. These patients will do well on plenty of meat and eggs, and very little starchy food

—just the opposite of those suffering from achylia—and also an alkali.

In the first group, achylia gastrica, it is not essential to administer hydrochloric acid, but in the second group, hyperchlorhydria, we will have to give alkalies.

We shall proceed now to the larger group of chronic diarrhœa, due to abnormal conditions in the small intestine. This is the more difficult group to handle outside of the group due to intestinal obstruction (which we can only cure by an operation; otherwise we have to keep to liquid diet). This group, in which there is a chronic catarrh of the small intestine, comprises perhaps more than half the cases suffering from diarrhœa. Here diet plays a very important part, and we will have to discuss a little more minutely how to handle them and what we should do.

There is no unaminity of opinion among physicians nowadays as to the kind of diet to be given to such patients. Some say that

these patients will do well on an exclusively meat diet; others again will say that patients get well on an exclusive milk diet. Others again say that milk is the worst thing. Among the latter is Professor Rosenheim, who recently wrote an article on this group of diarrhœas. He says that he always failed with milk in such cases, because the milk sugar easily breaks down into lactic acid, which upsets the patient. He therefore excludes milk from the diet of these patients. He even goes so far as saying that the admixture of milk to cacao or to soup, and a little cream will also upset the patient.

So far as I am concerned I must say that I am not so much afraid of milk and I am rather of the opinion that while we should exclude all fruits, salads, highly spiced dishes, all irritating substances and cold beverages (all things which have a tendency to increase peristalsis should be carefully avoided), we should still try to give

a sufficient quantity of nourishment to these patients even if their actual condition of diarrhœa should apparently grow worse through the diet. I am of the opinion that if we are timid and give these patients very little food, they will, notwithstanding the improvement of their diarrhœa, perhaps having only two or three movements a day, soon suffer in their nutrition and the body weight will decrease. The great danger is that if such a condition of subnutrition is kept up, after a while we cannot cure such patients at all. This is the case with a great many of these patients.

In reality it is advisable to give rest to an organ which is diseased and it will then recuperate and do well later on and do more work. You may, in severe cases of diarrhœa, try such treatment. We may give the patient very little nourishment, perhaps egg albumen water, but if so one should always bear in mind not to restrict

the patient to this diet more than a week or ten days. After this period we must reëstablish the amount of nourishment, and put the patient on a regime which will build him up. It is important to consider that even though the patient feels improved and the chronic diarrhœa gets better on the restricted diet, he may be getting too little nutrition and a state of inanition results. The organs are weakened and the disease instead of growing better becomes aggravated. In this weakened state the organism is not able to recuperate. For this reason I say that in these cases of chronic diarrhœas, after having tried a very short period of time with little nutrition or no nutrition at all, we must give them plenty of food, plenty of eggs—eggs are indeed very good in these cases—six or eight eggs a day I generally give. We give them plenty of gruels and barley. You may try decoctions of barley, oatmeal and rice, and later on give them porridges,

and then bread and butter, and then meats. I do not exclude meats. I do not give them any fruits, salads or any cold drinks or anything of an irritating nature. Nourish them well.

What will you do if the diarrhœa is kept up? How will you manage that? Here certainly we must take recourse to some medicinal treatment. We may give them a tannic acid preparation; we may administer an opiate. It is much better to make the patients eat and keep them on some remedy, so that they are able to keep up with feeding and check the diarrhœa a little, than not to allow them to eat and not to take medicine.

I have found by experience that a great many patients soon begin to gain in weight, in fact in most of these cases you can achieve a gain in weight if you give them sufficient nourishment, more than enough to keep the body in balance. They will add flesh too, and as soon as they are stronger

they are able to fight the disease and do not require so much medicine. I have seen such cases. I particularly remember a patient who lost fifty to sixty pounds from chronic diarrhœa. She did not eat anything that was forbidden her, and she thought that milk increased the diarrhœa, also bread, and she did not wish to eat. Ultimately she took nothing. Her condition was so bad that she was almost a skeleton, but after I allowed her to eat and gave her in addition some slight remedy, after a few weeks she picked up and in two or three months recovered.

It is thus with a great many other patients, and I think it is very essential to bear in mind how important a part nutrition plays in prolonging life and curing disease.

LECTURE VI

THE DIETETIC TREATMENT OF DIABETES MELLITUS *

In no disease does diet form a more important part of the treatment than in diabetes mellitus. As is well known, the nature of the disease consists in the fact that the organism is unable either entirely or nearly so to utilize the carbohydrate foods. We thus have to deal with a genuine anomaly of metabolism, and the main points of treatment will consist of a rational and appropriate diet so long as there is no specific remedy for this disease.

As it is possible to live on meat and fat alone without carbohydrates, it was natural to exclude this latter group of foodstuff from the diabetic diet. This was, in-

* *Journal American Medical Association*, Dec. 29, 1906.

deed, done by the earliest observers who had knowledge of the nature of diabetes (Rollo, 1796), and this diet was adhered to with slight modifications until the present time.

The following disadvantages are attached to a purely animal diet: It offers too little variety and departs too much from the usual mode of life, and in this way will soon pall on the appetite. At the same time it is poor in inorganic salts, thus predisposing to a surcharge of the organism with acids (acidosis) and subsequent comatose conditions.

An absolute meat and fat diet can be borne for only a short period. Such a diet would be about as follows:

STRICT DIET.

8 A. M.: Two eggs, butter, tea; 11 A. M.: Ham, wine; 1 P. M.; Beef tea, 200 grams of meat or fish, one egg, lettuce or spinach; 4 P. M.: Coffee, two eggs and butter; 7 P. M.: Three eggs fried in lard, or fish with eggs or cold roast.

A trace of sugar is contained even in this diet, but it hardly amounts to over 1 per cent. By the addition of some milk and cream this diet may be made a little more agreeable, although the quantity of sugar is greater.

Such a diet list may be put together about as follows:

INTERMEDIATE DIET.

Breakfast: 200 grams of milk with 50 grams of cream, two eggs, butter and 100 grams of roast.

Dinner: 200 grams of meat or fish with asparagus or peas, salads.

4 P. M.: 200 grams of milk with 50 grams of cream.

Supper: Four scrambled eggs with 120 grams of ham.

C. von Noorden* determines first how much carbohydrate a patient can assimilate and allows about half of this. Such

* C. von Noorden: "Ueber Hafercuren bei schwerem Diabetes mellitus," Berl. klin. Wochschr., 1903, No. 36, p. 817.

a procedure appears very rational, but can be conducted only in special clinics and not in general practice. It is best to arrange the diet according to customary principles, varying it slightly to fit the individual requirements of the patient. Whether or not a diet agrees with the patient can best be determined by noting the diminution of the quantity of sugar, as well as the total daily quantity of urine, and secondly and mainly by the patient feeling better and stronger.

According to the experience of most clinicians, it is best to permit diabetics a certain, although limited, amount of carbohydrates.

Seegen's * diet list for diabetics is probably the best known and, therefore, I will quote it in full:

* J. Seegen: "Der Diabetes mellitus," Berlin, 1895; see also Friedenwald and Ruhräh: "Diet in Health and Disease," 1905, pp. 470-471.

SOLIDS.

Allowed in Any Quantity.—Meat of every kind, smoked meat, ham, tongue, fish of every kind, oysters, mussels, crabs, lobsters, meat jellies, aspic, eggs, caviar, cream butter, cheese and bacon. Of vegetables: Spinach, lettuce, endive, Brussels sprouts, pickles, fresh asparagus, watercress, sorrell, artichokes, mushrooms, nuts.

Allowed in Moderate Quantity.—Cauliflower, carrots, turnips, cabbage, green beans, berries, such as strawberries, raspberries, currants, also oranges and almonds.

Forbidden Absolutely.—All foods made from flour or meal; bread is allowed in moderate quantities, according to the physician's orders; sweet potatoes, rice, tapioca, arrowroot, sago, grits, vegetables, green peas, cabbage, sweet fruits, especially grapes, cherries, peaches, apricots, plums and dried fruit of every sort.

BEVERAGES.

Allowed in Any Quantity.—Water, soda water, tea and coffee. Of wines: Bordeaux, Rhine wine, Moselle, Austrian and Hungarian table wines—in a word, all wines that are not sweet

and that do not contain more than the average amount of alcohol.

Allowed in Moderate Quantity.—Milk, bitter beer, unsweetened almond milk, lemonade without sugar.

Forbidden.—Champagne, sweet beer, cider, fruit wine, sweet lemonade, liqueurs, fruit juices, water ices, sorbets, cocoa and chocolate.

In general, I use about the same diet as Seegen and give the following:

		Calories.
Breakfast:	Three eggs	240
	Half a roll (20 grams)	50
	Butter (30 grams)	251
	Coffee (150 grams), milk (100 grams), cream (50 grams)	203
Dinner:	A plate of soup (200 grams), with egg	85
	Meat (200 grams)	200
	Half a roll and butter (15 grams)	175
	Asparagus with butter sauce (salad)	30
Supper:	Oysters or fish (100 grams)	100
	Three scrambled eggs with butter (15 grams)	365

Half a roll with butter (15 grams)	175
Westphalian ham (50 grams) ...	200
Apples, tea and cream (50 grams)	138
	2,212

Various diet cures have proved of value in diabetes. Of these the best known are the "milk cure" of Winternitz,* the "potato cure" of Mossé, and the "oatmeal cure" of Von Noorden.†

Whereas Mossé's potato cure has not proved of much value, the other two cures are useful in suitable cases. They should not be extended over too long a time because a too limited diet is harmful if continued too long. Winternitz's milk cure consists in the patient taking milk exclusively (about four quarts daily).

Von Noorden recommends his oatmeal cure, especially in grave cases of diabetes.

* Winternitz und Strasser: "Strenge Milchkuren bei Diabetes mellitus," *Centbl. f. innere Med.*, 1899, No. 45.

† C. von Noorden: "Ueber Hafercuren bei schwerem Diabetes mellitus," Berl. klin. Wochschr., 1903, No. 36, p. 817.

He uses either Knorr's oatmeal or Hohenlohe's oatmeal flakes. This substance is boiled in water for a long time with a little salt; while boiling butter and a vegetable albuminoid or, after cooling, the beaten white of eggs are added. Roborant may be employed for this purpose with good advantage. The daily quantity is 250 grams of oatmeal, 100 grams of albumin and 300 grams of butter. The soup prepared in this manner is given every two hours. Cognac or wine or black coffee may also be permitted.

No matter what form of diet is instituted, it is always essential to see that the quantity of food is sufficient. In this respect fat (butter, cream, oil, lard) is of more importance here than in other conditions. Alcohol, taken moderately in the shape of whisky, cognac or wine, is also of value. The body receives in the first place more fuel (as 50 grams of alcohol, which may be put down as the daily quan-

tity, contain about 350 calories), and secondly because the patient, with the addition of wine, can take more of the greasy food than without it.

STOMACH COMPLICATIONS.

After thus having touched on the fundamental principles of diet in diabetes mellitus, I would like to add a few words about it in those cases of diabetes which are complicated with affections of the stomach. Two groups of functional disturbances of the stomach are found most frequently in diabetes, hyperchlorhydria and achylia.

If hyperchlorhydria complicates diabetes the treatment is easy, as the diet is the same in both (principally fat and albumin). Even the medicinal treatment of hyperchlorhydria (alkalies, sedatives) influences also the diabetes favorably.

It is different in achylia gastrica complicating diabetes. As is well known, meat is not well borne in achylia gastrica,

whereas a vegetarian diet (plenty of carbohydrate) usually agrees best with these patients. We are thus confronted by a dilemma. The diabetes requires a preponderance of animal, the achylia a preponderance of vegetable food. We must find a way to select the food so that while it is rich in protein and fat it still contains little meat.

In these cases a trial of the von Noorden oatmeal cure would be appropriate.

In numerous cases of such a combination of achylia and diabetes I have used the following diet list with advantage:

		Calories.
Breakfast:	Three soft boiled eggs	240
	One roll (40 grams)	100
	Butter (30 grams)	251
	Coffee (200 grams) and cream (50 grams)	138
Dinner:	Beef tea (200 grams), with meat powder (30 grams)	118
	Three scrambled eggs	240

	Half a roll	50
	Butter (30 grams)	251
	Spinach or asparagus (50 grams)	82
Supper:	Two eggs beaten with 150 grams of milk and 50 grams of cream	394
	Mashed Potato (50 grams)	63
	Crackers (10 grams)	24
	Cream cheese (20 grams)	79
	Butter (30 grams)	251
9:30 P.M.:	300 grams of Kumyss with Almonds and nuts	100
		2,381

It is understood, of course, that this diet must be somewhat varied. I often use pea soups, although they contain a considerable amount of carbohydrates.

After the patient has lived on this diet for about one week, it is better to add for dinner some meat (chicken, calf's brain, sweetbread or chopped meat).

The main point in the treatment of these patients lies in the fact that they have to take more carbohydrates than usual and

that they do better under this mode of treatment.

The urine naturally must also serve here as an indicator to determine whether or not the amount of carbohydrate is harmful.

Another class of digestive disturbances occurring in diabetics is that of catarrh of the stomach or bowel. We usually have to deal with acute affections of the stomach and bowel, or of both organs, produced by overfeeding with too greasy or too heavy food.

In these cases the dietetic treatment must be directed especially against the acute affections and we must leave the diabetes out of consideration.

A bland meager diet is the main thing (beef tea, gruels, milk, possibly raw eggs beaten up in milk or beef tea). When the acute stage of the digestive disturbances is passed we can slowly return to the anti-diabetic diet.

LECTURE VII

DIET REGIMES

In my previous lectures I have given the principles of diet in health and disease. Based upon them every physician will be enabled to arrange a diet suitable to the requirement of each case. In the following, however, I thought it best to describe briefly several important standard diet regimes, which can be used to advantage for shorter or longer periods of time in appropriate cases but never indefinitely.

I. SUPERALIMENTATION REGIME.

Breakfast, 7:30–8 A. M.: Oatmeal with butter, or farina with cream, 2 eggs, bread (1–2 rolls) and butter, one cup of coffee (half milk) with sugar.

10:30: One cupful of milk with one raw egg beaten up in it; bread and butter.

Luncheon, 12:30–1: One cup of bouillon with one egg, 1–2 rolls, butter, tender meat, mashed or baked potato; weak tea (half milk) with sugar.

3:30: Same as 10:30 A. M.

Dinner, 6:30–7: Cream soup; fish; tender meat, potato, peas or beans; bread and butter, stewed fruit; small cup of coffee.

9:30: Kumyss and crackers and butter.

The quantity of butter to be used daily should be about a quarter of a pound.

This superalimentary regime can be kept up for a long period of time and is suitable in conditions in which a building up of the system is required.

II. PROTEID—FAT REGIME.

a)

Breakfast: One cup of tea (no sugar, no milk), one egg with butter, one portion of ham, or bacon.

Dinner: One cup of bouillon (℥vii), 200 gm. (℥vii) meat or fish broiled, 2 eggs, hard boiled, lettuce, spinach or asparagus, one cup of tea.

Supper: Fried eggs (3) and bacon, or fried

fish with hard boiled eggs or a portion of cold meat, 150 gm. (℥v).

This diet is suitable for diabetes mellitus and for reducing corpulency. Elderly persons and patients with heart and kidney lesions do not bear well this rigorous regime. It is then necessary to add some more vegetables (green peas, beans) and a small quantity of milk or cream to the above bill of fare.

b) *Banting's Regime.*

Breakfast: Meat (beef, mutton, kidneys, fish or ham), 120–150 gm. (℥iv–v); one big cup of tea (without milk or sugar); zwieback or toasted bread (without butter), 30 gm. (℥ii).

Dinner: Fish (excepting salmon) or meat (excepting pork), 150–180 gm. (℥v–vi); vegetables (excepting potato); toasted bread, 30 gm. (℥i); (red wine or Madeira, 2–3 glassfuls permissible; champagne or ale forbidden).

During the afternoon: Fruit, 60–90 gm. (℥ii–iii); 1–2 zwieback; one cup of tea without milk or sugar.

Supper: Meat or fish, 90–120 gm. (℥iii–iv); grog without sugar or 1–2 glassfuls of claret.

Notwithstanding the apparent great amount of foods this bill of fare contains, it furnishes but 1100 calories per day. The Banting regime is used principally as an antifat diet. A great many patients, however, cannot stand it and frequently collapse after using it a few days.

Ebstein improved the Banting regime and modified it as follows:

c) Ebstein-Banting Regime.

Breakfast: Tea, one cup, without milk or sugar; bread, 50 gm. (℥i⅔), plenty of butter.

Dinner: Soup, one plate; meat, 120–180 gm. (℥iv–vi), fried or boiled with rich gravy; beans, peas and cabbage; (no potatoes, no beets); salad; raw or baked fruit without sugar; mild white wine, 1–2 glassfuls.

In the afternoon same as at breakfast.

Supper: One cup of tea without sugar or milk; one egg; fried meat or ham, smoked fish; bread about 30 gm. (℥i) well buttered; a small portion of cheese, and fresh fruit.

d) Oertel-Banting Regime.

Breakfast: Wheaten bread, 30 gm. (℥i); coffee, 120 gm. (℥iv), with milk, 30 gm. (℥i); sugar, 5 gm. (ʒi); 2 soft-boiled eggs (90 gm. or ℥iii).

At 11 A. M.: Wine, bouillon, or water, 100 gm. (℥iiiss); cold meat, 50 gm. (℥i⅔); rye bread, 20 gm. (℥⅔).

Dinner: Wine, 250 gm. (℥viii⅓); fried beef, 150 gm. (℥v); salad, 50 gm. (℥i⅔); pudding, 100 gm. (℥iii⅓); bread, 30 gm. (℥i); fruit, 100 gm. (℥iii⅓).

4 P. M.: Coffee, 120 gm. (℥iv); milk, 30 gm. (℥i); sugar, 5 gm. (ʒi).

Supper: Wine or water, 250 gm. (℥viii⅓); caviar, 12 gm. (ʒiii); venison, 150 gm. (℥v); cheese, 15 gm. (℥ss); rye bread, 20 gm. (ʒv); fruit, 100 gm. (℥iii⅓).

III. VEGETARIAN DIET REGIME.

a) Schroth's Dry Diet.

Patient is allowed to eat dry well-baked rolls, 2–3 days old. At noon-time he takes a soup, made out of water, rice, farina or broken up rolls with the addition of some butter or salt. As a drink patient is given oatmeal

gruel and is told to sip it slowly, when real thirsty.

This diet is maintained for the first week. During the second week a glassful of wine mixed with half a glassful of water and some sugar is given warm in the afternoon, while the rest of the diet remains unchanged.

During the third week patient lives on the same diet, but leaves off the wine every alternate day.

Schroth's diet may be advantageously used in œdematous swellings and ascites, also in arteriosclerosis, omitting the wine, however, for a period of 5 days or a week. Being a diet much deficient in calories and nutritive material it must be employed with great care and for short periods of time only.

Very similar to Schroth's diet is

b) Bulkley's Rice, Bread, Butter and Water Regime.*

The patient lives exclusively on rice, bread, butter, and water.

* L. D. Bulkley: Personal Experience with a Very Re-

The rice should be thoroughly cooked with water (not with milk). Generally it is better to have it dried out somewhat, so as to be flaky, by leaving it uncovered on the fire for a while. The rice is freshly prepared with abundance of butter and salt. It should be eaten slowly with a fork and be perfectly masticated. The bread and butter should also be well-chewed, to secure the full action of the saliva. Water, hot or cold, but not iced, is to be taken freely, but not to wash down the food in the mouth.

This diet should be kept up for 5 days, when an ordinary mixed diet is resumed.

This rice, bread, butter, and water diet is useful in acute inflammatory conditions of the skin like eczema, erythema, and principally itching.

(*c*) *Hoffmann's Regime* *

Hoffmann's regime is a coarse vegetable diet consisting of brown bread, Graham bread, butter, potatoes, and all kinds of vegetables contain-

stricted Diet (Rice) in Acute Inflammatory Diseases of the Skin. *Med. Record*, Jan, 28, 1911. Also Bulkley, "Diet and Hygiene in Diseases of the Skin," Hoeber, N. Y., 1913.

* A. Hoffmann: Leyden's Handbuch der Ernährungstherapie, Bd. I, p. 568; Leipzig, 1896.

ing much cellulose, principally cabbage; beets, beans, mushrooms, salads; peas, lentils (not puréed); plenty of fruits.

Hoffmann's regime is best adapted for obstinate neuralgias of unknown origin and for obesity accompanied with constipation. It may be kept up for a period of two weeks. Then it must be changed into a diet of greater nutritive value.

IV. MILK REGIME.

Milk is a complete nourishment and may be given up to 3–4 quarts daily. The patient will best take about a pint of milk every 2 hours.

This diet is indicated in irritative conditions of the digestive tract (ulcus ventriculi; chron. enteritis; cirrhosis hepatis, and in affections of the kidneys.

Karell * highly recommended the milk diet. He gave during the first week 200 cc. (℥vii) of skimmed milk four times daily. If there were no bowel disturb-

* Karell: Arch. générales, 1866.

ances he increased the quantity during the second week to one quart and a half daily.

Karell's scanty milk diet is useful in severe neuralgias, in affections of the heart and kidneys, accompanied with œdematous swellings or ascites.

V. SOUP DIET.

Soup diet or liquid diet consists of mixtures of nourishment given in fluid form. This is the standard diet for all acute febrile diseases, and for chronic conditions for periods of time. It can be varied according to the requirement of the case. Eight to 10 ounces of gruels (oatmeal,—barley,—rice or pea—or lentil-flour) alone or mixed with half milk every 2 hours can be employed in most instances. When it is necessary to supply a sufficient nutrition, raw eggs, lactose, or butter may be added and should be thoroughly mixed with the above foods. Thus 1–2 eggs may be mixed in a cupful of milk, or gruel, or bouillon; or lactose ℥ss–℥i, or butter ʒi–ii added to milk or gruels with or without egg. Instead of milk kumyss or zoolak or buttermilk may be given for a change. Clambroth and oyster-stew in milk, without the oysters further en-

large the bill of fare. Milk, flavored with tea, cocoa, or coffee; lemonade, orangeade, are also useful in increasing the variety of the monotonous diet.

LECTURE VIII

INDICATIONS FOR AND DESCRIPTION OF THE METHOD OF DUODENAL FEEDING *

DUODENAL alimentation means feeding a patient in such a manner that the stomach is kept empty. This can be done by introducing a small tube into the stomach, whence it passes of itself into the duodenum, and is left there. The main purpose of this method is that we should have the patient always ready for feeding, independent of his desire to eat or his aversion to food. It is easily done. The tube can even be allowed to go into the small intestine, depending upon the length of the tube.

I have practiced this method for the last

* Delivered before the Clinical Society of the New York Post-Graduate Medical School and Hospital, March 21, 1913, and published in the *Postgraduate*, June, 1913.

three and a half years and have treated some eighty-four patients by this method, for periods varying from ten to fifteen days,—most of them from fourteen to fifteen days.

The food is usually given every two hours, eight feedings a day. The standard food is milk (7 to 8 ounces), one egg, and a tablespoonful of lactose. The lactose sometimes causes diarrhœa and should then be omitted. In some cases where it is essential to see that there is no loss of flesh, butter (1 to 2 drams) may be added in every alternate or in each feeding. This standard diet furnishes 2215 calories. If in addition, one ounce of lactose was given that would bring it up to about 2695 calories for a grown person. If butter was added, it would bring it up to 3000 and more calories. Only a few patients cannot stand the milk, the latter creating such a disturbance that it must be eliminated. Such patients tell you that

FIG. 1.—Patient Being Fed through the Duodenal Tube.

they never could take milk anyway. Here instead of milk, water with barley or pea flour can be substituted. Whatever is fed to the patient must be of blood temperature—neither cold nor hot—strained over a cloth, and it must be given slowly. When I began to feed these patients I made use of an irrigator, letting the fluid run in by gravity which would carry it to the duodenum, but *it was soon found* that this was very inconvenient. The temperature cannot be so well maintained, and the flow is either too quick or too slow. It was very troublesome, and the patients could not stand it, so this syringe was devised, provided with a three-way stopcock and with this little table (Fig. 2), so that there is no need of loosening the syringe from the tube each time the former has to be filled, and the feeding can be made slow or fast as desired. The patients usually prefer to have it administered slowly, for if given quickly they feel uncomfortable. It

is a very tedious performance, but the patients can soon learn to feed themselves, and it gives them something to occupy themselves with. It requires about twenty minutes or so for each feeding, and that

FIG. 2.—The Duodenal Feeding Apparatus, with Table Support. A, Tube leading to syringe; B, tube leading to duodenal pump; C, crank; D, tube leading to fluid; F, fluid; G, glass; T, table support or shorter support. When crank C is turned parallel to A, fluid can be aspirated from the glass into the syringe. When C is moved parallel to B, the fluid from the syringe can be emptied into the duodenum.

repeated for eight times a day, gives them something to do.

A word in regard to the technical points of this method of alimentation. The tube is put into the throat of the patient and he swallows it with water. Care must be exercised that the patient does not swallow too quickly, so that it does not rotate on itself, but will be taken straight into the stomach. Then, a little later, liquid food is given by the mouth and tests are made from time to time through a syringe attached to the tube to see what can be obtained. If the duodenal pump is still in the stomach an acid liquid appears quite quickly by aspiration. If the pump is beyond the pylorus, in the duodenum, it is very difficult to obtain fluid, for the duodenum is usually empty. The secretion appears slowly in drops from time to time and shows an alkaline reaction. Another point of differentiation is that if we should put in air through the syringe, the patient

feels it right away if the pump is in the stomach; but if the tube end is in the duodenum there is less conscious sensitiveness and the patient does not feel the air at all. If we have to deal with a patient who has no gastric secretion it is more difficult to determine when the pump has entered the duodenum. Here there is no acid in the stomach anyway, and in order to ascertain whether the pump is in the stomach or duodenum, we make use of different colored fluids. For instance, a patient who has had no milk, but only bouillon or tea, may be given a white (colored) fluid, such as milk. If we then aspirate and obtain a fluid that is not white, we know that the tube end is beyond the stomach. If the patient had milk we give him black coffee, or any colored fluid that is not white.

In normal individuals it usually takes two or three hours for the tube to go through into the duodenum, but in cases where we have to apply this method, we

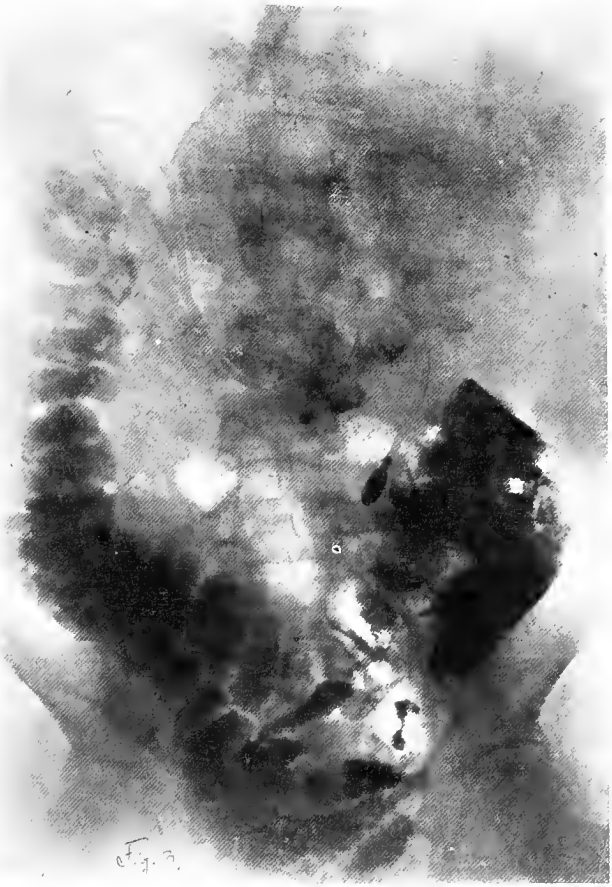

FIG. 3

Patient W. S. F. with duodenal tube in the duodenum with empty stomach.

The X-ray photographs (Fig. 3 and 4) were kindly made for me by Dr. I. S. Hirsch, Radiologist to the New York Postgraduate Hospital.

often have to deal with the pyloric spasm, and then it takes much longer. In some cases I have had to wait twenty-four hours, the longest time being thirty-six hours. During the period of the tube passage, patient is fed by the mouth with liquid diet and tests are made from time to time in order to ascertain the location of the tube.

On the other hand, in cases of achylia gastrica, the passage of the tube into the duodenum takes place very quickly. We test it and find it sometimes already after 5 or 10 minutes in the duodenum. The motility is much greater there.

With regard to the method of feeding again: The temperature must be just right. The food introduced must be free from thick particles. All the food should be strained, because in passing through the long fine tube it would easily become blocked if this precaution were not taken. A thin tube is better for the patient. The smaller the tube, the pleasanter for the pa-

tient; but, on the other hand, the more difficult the handling of it. Another rule is that after each feeding, after the food has been given, a little fluid should be thrown in and then a little air when the stopcock is closed, in order to keep the tube always empty. If one is not careful to clean out the tube with water and air, the end becomes clogged in a day or two, and the tube has to be taken out and replaced, with a great deal of inconvenience to the patient, as well as to the doctor and nurse, and that tube is often spoiled. Where I have patients under my direct supervision, nothing of that kind happens. It is simply faulty technique when that occurs.

Another point is that while the patient has the tube in, his mouth should frequently be washed out with some good mouth wash. If these patients do not eat anything, there is nothing to cleanse off the surface of the tongue, and it is very essential that that should be kept clean.

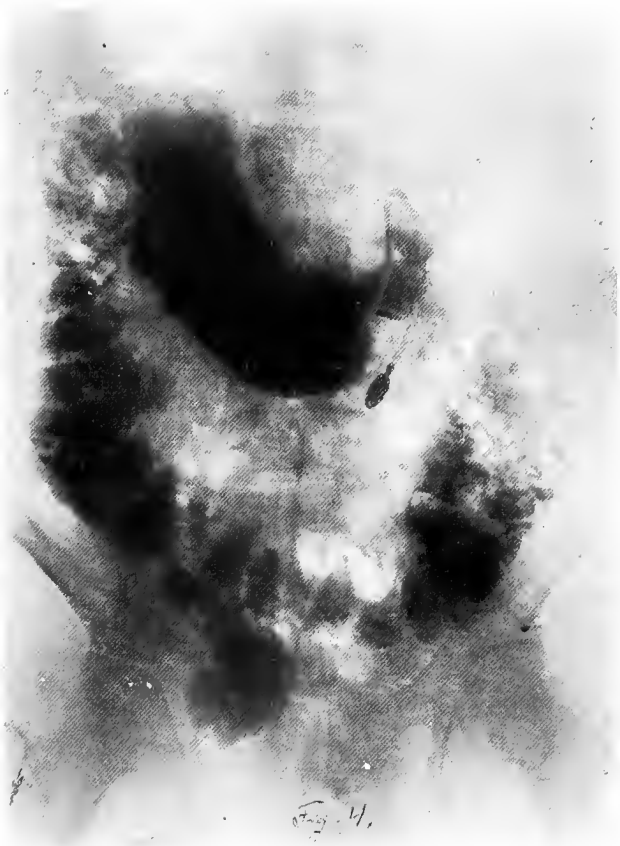

FIG. 4

Patient W. S. F. after the ingestion of a bismuth mixture into the stomach. The end of the duodenal tube is distinctly visible outside of the stomach, in the duodenum.

The tube is left in permanently during the course of this treatment. Outside of the feeding, the patient is given a pint of saline by the duodenal tube. The saline may be given either with the syringe or by connecting an irrigator to the tube. The main point is to let the fluid run in slowly and at the right temperature. If the patient does not like that, it may be given into the rectum by the Murphy drip method, for the bowels absorb saline very well. The food is the vital thing. By this method we accomplish perfect nutrition and everything is utilized.

In my first patients I watched the weight very carefully, and we found that in most of them it was possible to keep them from losing weight. Some of them lost, but it was mainly due to a loss of water. They lost no real flesh, for the nitrogen examination showed that under this regimen they were able to add to their nitrogen balance. It is very important to make the

patients gain a little weight, but not so necessary as to keep them from losing weight. If we want them to gain, we add a little butter to the regimen.

This method of feeding keeps the stomach empty and so gives it perfect rest. The principle of rest is a very important factor in curing disease, and this is an ideal method of accomplishing that purpose. A second point is that very often it is essential to accomplish a change in the size of the stomach. If it is greatly dilated, we can keep it empty, and thus give it opportunity to return to its normal size. Still another point along the same line comes up when we have to deal with a dilated esophagus due to cardiospasm. While the usual method of treatment in such cases is the stretching of the cardia, in some instances we find that this alone is not sufficient, and that everything remains in the esophagus. Here we try to keep the esophagus empty. We must have

the food on the other side, and the esophagus and stomach are kept empty.

Another point in the same line of saving the organ. This method I have recently applied to the treatment of diseases of the liver, with enlargement of that organ, and cirrhosis of the liver. The object is to lessen the inflow of blood to the portal vein. Everything that is taken into the stomach must pass through the veins of the stomach and then through the portal vein before it reaches the general circulation. The capillaries in the stomach fill up and the veins carry the blood to the liver. The same occurs with the blood from the duodenum, the esophagus, etc. The fluids have to go into the portal vein and then into the liver before they reach the general circulation. If the liver is diseased, it is difficult for it to take up the amount of blood and exert its functions fully. If you reduce part of the inflow, much saving to the liver is accomplished.

In the large number of patients whom I have watched under this method of treatment, the results have been very satisfactory. One of the important advantages of this method is that by it we are independent of the will of the patient. We often have to deal with conditions in which nutrition becomes extremely difficult, extreme anorexia, or aversion to food, etc. In the case of patients suffering from tuberculosis, kidney trouble, and other conditions, it is most important to keep up the nutrition, and by this method the patient can be fed independent of his will. He does not have to eat anything, and he does not reject his food. Some time ago I met a physician, who was quite well advanced in years, who was suffering from chronic nephritis and who could hardly partake of any food on account of absolute anorexia. I did not feel like suggesting this mode of alimentation to him, but I gave him one of my reprints on the

subject. He read it, but did not apply it, and died about two weeks later. If this method of nutrition could have been applied in that instance, his life could doubtless have been prolonged.

The indications for this method of treatment are: First, ulcerations of the stomach and duodenum. Second, a great many cases of dilatation of the stomach without organic obstruction; extreme atony, no matter whether there is a pyloric spasm present or not. (In many instances I have found an actual reduction in the size of the stomach under this treatment.) Third, in cases where nutrition is difficult, nervous vomiting, vomiting of pregnancy, etc. One might at first think it would be impossible to apply this in such cases, for the tube would be vomited, but this is not so.

We at first applied some remedies to make it possible for the tube to remain in the stomach, but as soon as it got into the

duodenum or further down, the vomiting ceased, or the patients only vomited something from the stomach; as a rule, they do not reject the tube. In many instances where there was very severe vomiting, this method of alimentation has been the only feasible one. A fourth indication, is disease of the liver, and still another, fifth, is inoperable cancerous conditions of the stomach or cardia, where the stomach is not closed up and the duodenum can be reached. In such conditions this method can be applied and bring comfort to the patient.

In one instance I could not make the diagnosis, but the patient had pains all the time and could not retain any food. As soon as this method of alimentation was instituted, the pain ceased, and for weeks he was free from pain and was happy. When the tube was removed, he was examined and found to have a malignant disease of the cardia, and later he was oper-

ated upon and died shortly after, but during all his illness he was never so comfortable as during the time that he had duodenal alimentation.

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